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STRATEGY & ACTION PLAN
For Accelerating Technology Transfer (T2)
and Commercialization of Federal Research
in Support of High Growth Businesses



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14. ABSTRACT The 28 October 2011 Presidential Memorandum (PM) titled, ???Accelerating Technology Transfer and Commercialization of Federal Research in Support of High Growth Businesses tasked Federal Departments, including the Department of Defense (DoD), to develop a strategy and action plan for establishing goals and metrics in support of accelerating Technology Transfer (T2).					
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1. Introduction

Tasking

The 28 October 2011 Presidential Memorandum (PM) titled, “*Accelerating Technology Transfer and Commercialization of Federal Research in Support of High Growth Businesses*” tasked Federal Departments, including the Department of Defense (DoD), to develop a strategy and action plan for establishing goals and metrics in support of accelerating Technology Transfer (T2).

Accelerated T2 is of particular importance in today’s economic climate because it can both stimulate economic growth and increase the DoD’s return on its R&D investments through licensing agreements and private sector engagements.

KEY ISSUE:	LOCATION:
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Public Access	Section 6, p. 17
Streamlining	Section 6, p. 17
Tracking	Section 3, p. 8
Grant Review	Section 6, p. 18
SBIR	Section 6, p. 18
Partnership Engagements	Section 7, p. 19
Authorities	Section 7, p. 19

In conjunction with the DoD T2 Working Group (DTTWG), comprised of the Army, Navy, and Air Force Laboratory communities and other relevant parties, the Defense Laboratories Office under the Office of the Assistant Secretary of Defense for Research and Engineering (OASD(R&E)/DLO/DLO) developed this Strategy and Action Plan to define **enhanced metrics with associated performance goals** to meet the intent of the PM and to encourage an increase in effective Defense Laboratory technology transfer. DoD will use this opportunity to generate process enhancements and to expand its T2 metrics to establish a new baseline for the value of its T2 activities. The new metrics will provide increased context for understanding the benefits gained through the actions included in this document.

Strategy and Action Plan

DoD is committed to the T2 mission, and has historically engaged in a wide range of T2 activities throughout the DoD Laboratory Enterprise. In response to the Presidential Memorandum, the DTWWG developed four main T2 goals that will be discussed in this Strategy and Action plan: 1) Internal Process Improvements; 2) Innovation Enhancements; 3) Positive Economic Impacts; and 4) Enhanced T2 Enterprise Intelligence. Each of these objectives has subordinate performance goals that include new metrics where appropriate, as discussed in detail in Section 4. This Strategy and Action Plan initiates efforts for developing performance measures that will permit DoD’s T2 participants to baseline their performance and to determine what initiatives and program changes may be warranted to improve future performance. It also addresses streamlining the T2 process and facilitating local and regional partnerships (in Section 6) and facilitating T2 through local and regional partnerships as discussed (in section 7).

Significantly, improving the overall T2 effort will involve multiple entities working together for the collective benefit of both the DoD and industry. Accurate and relevant data are essential in supporting analysis based on actual versus planned outcomes relative to established performance goals. Accordingly, the data collection process and performance goals identified herein will be continuously updated over time. By enacting the defined actions in Section 8 of this document, the Plan of Actions and Milestones for 2013-2017, the DoD will be able to meet these goals and objectives.

2. The Department of Defense Approach to T2

Definition

The Department of Defense uses the following definition of technology transfer (per DoDI 5535.8)¹:

"Technology Transfer (T2) is the intentional communication of knowledge, expertise, facilities and equipment, and other resources for application to military and non-military systems. It includes:

- *Spin-off activities demonstrating commercial viability of DoD-developed technologies*
- *Spin-on activities demonstrating national security utility of technologies developed outside DoD*
- *Dual-use science and technology that develops technologies having both defense and non-defense applications."*

Current DoD T2 Authorities

Within the DoD, T2 efforts function as a use of appropriate non-FAR authorities/transactions by collaborators under the authority of 15 U.S.C. 3701, *et seq.*², 10 U.S.C. 2515³, and DoD Directive 5535.3. T2 is best described as a decentralized process with local application governed by broad DoD and DoD Component policy and assignment of responsibilities. Each Military Service and participating Defense Agency has implementing guidance with a formal Office of Research and Technical Applications (ORTA) at each laboratory/technical activity and supplemental support from financial personnel, Intellectual Property (IP) Attorneys, and the many individual scientists and engineers who conduct the actual research and development work.

While this decentralized approach allows the local technology transfer processes, procedures, and projects to fall within the specific mission-related activities of the local laboratories, there is overarching DoD guidance in place to ensure common policy and objectives. For example, DoD Directive 5535.3 (DoD Domestic Technology Transfer (T2) Program) and DoD Instruction 5535.8 (DoD Technology Transfer (T2) Program) establish policy, assign responsibilities, and prescribe procedures for implementation of T2 programs. These documents establish an overarching policy to direct the program, *"Consistent with national security objectives under 10*

¹ DoDD 5535.3 and DoDI 5535.8: Establishes Technology Transfer as integral to achieving national security mission and meeting the country's economic security needs and goals; define the authorities, responsibilities and guiding principles for the OASD(R&E)/DLO to direct and oversee and the DoD components in executing T2.

² 15 USC 3701-3715: Emphasizes how technology and industrial innovation are critical to the U.S economic, environmental, and social well-being. Establishes national authorities for T2 across the federal agencies.

³ 10 USC 2515: Affirms that technology developed for national security purposes should be integrated into the U.S. private sector to enhance the national technology and industrial base.

U.S.C. 2501⁴, T2 activities shall be an integral element of the DoD national security mission, a high-priority role in all DoD acquisition programs, and recognized as a key activity of the DoD laboratories and/or technical activities and all other DoD activities that may make use of or contribute to T2.” (For relevant statutory frameworks and authorities, please see Appendix 2.)

Value Creation

These efforts support the Department’s mission by transferring technologies to companies in the wider Innovation Ecosystem that have the capability to mature the technology, perform the product development or enhancement, and produce for military and/or commercial use. In addition, through collaborative relationships the DoD is able to leverage DoD innovations in new and novel ways, as well as co-develop technologies that embody the technology and expertise of others in partnership with the DoD labs.

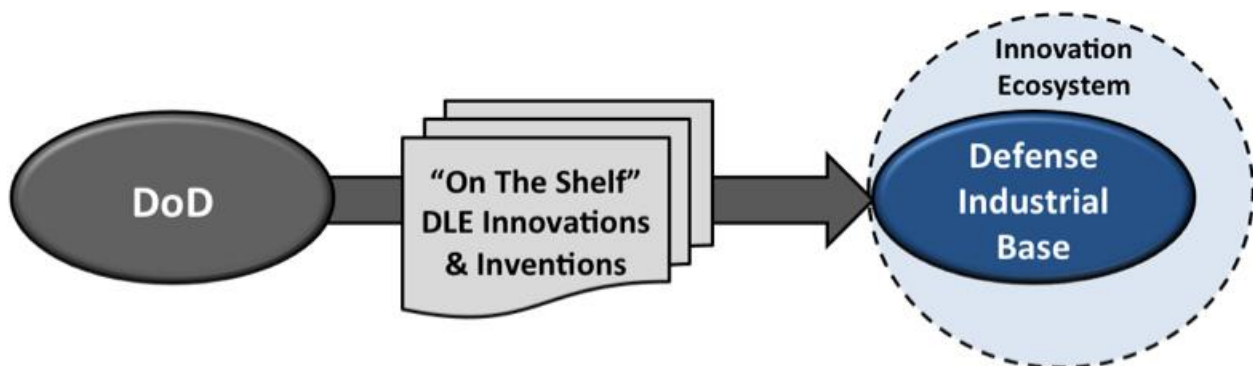


Figure 1 - T2 brings the DoD Laboratory Enterprise (DLE) Innovations and Inventions into the wider Innovation Ecosystem, which includes the Defense Industrial Base.

⁴ 10 U.S.C. 2501: Directs DoD through its acquisition policies to maximize use of the commercial national technology and industrial base to meet national security needs.

3. T2 Metrics & Baseline of Current Activities

As part of the DoD effort to strengthen and enhance commercialization and transfer of technology, the DTTWG initiated an examination of DoD T2 metrics. This review of metrics determined needed revisions to better track progress year on year. Therefore new metrics were developed to provide increased context and T2 Enterprise Intelligence to support the DoD's goal of accelerating T2 throughout the DoD Laboratory Enterprise.

DoD's Current Metrics

DoD currently uses several quantitative metrics to track its Department-wide T2 activities for each Component or Agency. DoD's metrics measure the successful outcomes of the Department's current T2 activities. These metrics are codified in 15 U.S.C. 3710(f)⁵, and include the following:

- i. the number of patent applications filed;
- ii. the number of patents received;
- iii. the number of fully-executed licenses that received royalty income in the preceding fiscal year, categorized by whether they are exclusive, partially-exclusive, or non-exclusive, and the time elapsed from the date on which the license was requested by the licensee in writing to the date the license was executed;
- iv. the total earned royalty income, including such statistical information as the total earned royalty income, of the top 1 percent, 5 percent, and 20 percent of the licenses, the range of royalty income, and the median, except where disclosure of such information would reveal the amount of royalty income associated with an individual license or licensee;
- v. what disposition was made of the income described in clause (iv);
- vi. the number of licenses terminated for cause; and
- vii. any other parameters or discussion that the agency deems relevant or unique to its practice of technology transfer.

Though important, this information is primarily focused on activities and ***level of inputs*** as opposed to ***impacts and outcomes***. As such, ***the data provide only a partial picture*** of what DoD achieves with non-Federal parties through use of T2 authorities. Furthermore, the data are used mostly to reply to inquiries, as opposed to developing a broader perspective of T2 efforts. Of note, in addition to the statutory data collection and reporting requirements described above, DoDI 5535.8 requires the annual submission of "business plans" for the T2

⁵ 15 U.S.C. 3710: States that transfer of federal technology is the responsibility of all federal Agencies, the S&Es in the Federal labs, and is to be promoted by laboratory directors; establishes Office of Research & Technology Applications within each federal lab.

activities of the labs. These business plans will be better harnessed to improve and track over time the efficacy of DoD's T2 efforts.

New, Enhanced T2 Metrics

Meeting the PM's stated objectives for accelerated T2 requires DoD to develop and track new, expanded, specific and appropriate metrics for evaluating progress in relevant activity areas. The DoD's new metrics are aligned to the four main categories for T2 enhancement: **1) Internal Process Improvements**; **2) Innovation Enhancements**; **3) Positive Economic Impacts**; and **4) Enhanced T2 Enterprise Intelligence**.

DoD's complete set of metrics is as follows, with current metrics denoted *in italics*, and the **new metrics denoted in bold**:

1. Internal Process Improvements
<i># New invention disclosures/ year</i> <i># Patent applications filed/ year</i> <i># Patents granted/ year</i> # T2 Trademarks registered/ year <i># New T2 Intellectual Property licenses/ year</i> <i># Active T2 Intellectual Property licenses</i> <i>% of new patents licensed</i> <i>% of total patents licensed</i> # T2 Intellectual Property licensed inventions used in commercialized products # CRADAs that produced an invention Laboratory ROI on T2 activity (review every two years)
2. Innovation Enhancements
<i>\$ Revenue received in T2 licenses</i> <i>\$ Revenue and resources leveraged via CRADAs</i> <i># New CRADAs/year</i> \$ Reimbursed via Commercial Test (10 U.S.C 2539b) Agreements # T2 licenses granted to New businesses (<5 yrs old)
3. Positive Economic Impact
Active CRADAs # of SBIR/T2 collaborations # T2 licenses granted to small businesses, academic institutions, and all other businesses # New Full Time Employees at firms accepting T2 licenses (review every two years) # New Part Time Employees at firms accepting T2 licenses (review every two years)
4. Enhanced T2 Enterprise Intelligence
Jointly Owned Inventions # of S&Es on personnel exchanges or training outside their organizations # Material Transfer Agreements/ year # Refereed journal articles/ year

Though the current metrics are incomplete for the purposes of meeting the current needs of the T2 value creation discussed herein, an overview of the last five years' T2 data (FY07 to FY11) collected by the DoD are presented in Appendix 1 at the end of this document is nonetheless useful. As a baseline, per collection against the current metrics only, the DoD has the following statistics for the T2 activity in FY11:

- CRADAs:
 - 2,554 Total Active CRADAs
 - 762 New CRADAs executed in FY11
- DoD Inventions & Patents:
 - 929 New Invention Disclosures
 - 844 New Patent Applications
 - 523 New Patents Granted
 - 633 Actively Licensed Inventions
 - 63 New Licenses for Inventions
- Total T2 Revenue:
 - \$15,364,843 in royalties from DoD Patent License Agreements generated from a total of 214 Income Bearing Licenses

DoD's baseline knowledge of the total value created by its T2 activities is limited and the strategy for generating increased context is discussed in the following sections. This increased knowledge of the value created by the DoD T2 efforts will allow the Department to refine its T2 directives and instructions, allowing for accelerated T2 throughout the DoD Laboratory Enterprise.

4. DoD T2 Objectives & Goals

Meeting the PM's stated objectives for accelerated T2 requires DoD to describe its Departmental objectives and goals. As described above, the DoD's T2 objectives are organized across the following four main categories: 1) Internal Process Improvements; 2) Innovation Enhancements; 3) Positive Economic Impacts; and 4) Enhanced T2 Enterprise Intelligence. Each of these objectives has subordinate goals that include new metrics where appropriate, as detailed below.

1.0 Objective: Internal Process Improvements. Establish enterprise-wide T2 best practices to encourage and facilitate accelerated commercialization and transfer of DoD innovations.

1.1 Goal: Developing New Policies for Accelerating T2

- 1.1.1 The inclusion of T2 goals and performance metrics in DoD's Service Laboratories strategic and operational planning will be encouraged by OASD(R&E)/DLO and reviewed annually. Performance against this goal will be measured by the numbers of new and active intellectual property licenses per year, and the number of new CRADAs established per year.
New Metrics to provide increased context for measuring accelerated T2:
 - Number of CRADAs that resulted in new invention disclosures
 - Number of new trademarks registered each year
- 1.1.2 The implementation of policies and procedures to streamline and improve public access to DoD innovations and patents in the DoD's Service Laboratories will be encouraged by OASD(R&E)/DLO and reviewed annually. Performance against this goal will be measured by the numbers of new and active intellectual property licenses per year, and by the percentage of total patents licensed per year.
New Metric to provide increased context for measuring accelerated T2:
 - Number of DoD intellectual property licenses actively used in commercialized products.
- 1.1.3 OASD(R&E)/DLO will encourage the DoD's Military Service Laboratories to ensure efforts to engage in accelerated T2 by laboratory personnel will have positive reflections in personnel review and promotion criteria.

1.2 Goal: Sharing DoD T2 Best Practices

- 1.2.1 OASD(R&E)/DLO will complete a Comprehensive Review of the Defense Laboratory Enterprise (DLE) T2 Best Practices. The Comprehensive Review will include interviews with ORTA personnel and T2 stakeholders and a comprehensive review of DLE T2 legal authorities.
- 1.2.2 OASD(R&E)/DLO will distribute findings from T2 Best Practices Comprehensive review and encourage adoption of relevant lessons learned by all Laboratories and Facilities within the DLE. Effectiveness of distribution of best practices will be reviewed in follow-up comprehensive reviews of the DLE. Performance against this goal will be measured by the number of new invention disclosures, patent applications, and patents granted per year; number of new and active intellectual property licenses per year; and the percentage of new and total patents licensed per year.

New Metrics to provide increased context for measuring accelerated T2:

- Laboratory Return on Investment (ROI) on T2 activity
- Number of T2 trademarks registered per year

2.0 Objective: Innovation Enhancements. Foster the Defense Laboratory Enterprise's Innovation Ecosystem through the use of accelerated T2 as an "RDT&E Force Multiplier."

2.1 Goal: Increasing the Availability of DoD Innovations

- 2.1.1 OASD(R&E)/DLO will recommend availability of all appropriate DoD innovations (patented and non-patented) in DoD Service Laboratories be made available immediately after invention disclosures on the Federal Laboratory Consortium's publicly accessible website. Additionally, for sensitive technologies select partners will be engaged, as appropriate. Effectiveness will be measured through number and percentage of total new patents licensed by the DoD.

2.2 Goal: Leveraging the wider Innovation Ecosystem to Mature DoD Innovations.

- 2.2.1 OASD(R&E)/DLO will encourage DLE entities to use CRADAs as an RDT&E Force Multiplier. Performance will be measured through amount of revenue received into DoD through CRADAs each year.
New Metrics to provide increased context for measuring accelerated T2:

- Number of T2 licenses granted to new businesses (less than five years old)
- Classification of recipients of T2 licenses: small business, academic institution, and all other businesses

3.0 Objective: Positive Economic Impact. Accelerate commercialization of DoD Innovations by private sector to build new industries, generate employment opportunities, and foster the wider Innovation Ecosystem.

3.1 Goal: Streamline CRADA processes

3.1.1 CRADA Standardization. OASD(R&E)/DLO Defense Laboratories Office will distribute results of its T2 Comprehensive Review to all DLE T2 personnel to help standardize CRADA usage throughout the DLE. Performance against this objective will be measured through the number of new CRADAs signed per year and amount of revenue received through CRADAs.

New Metrics to provide increased context for measuring accelerated T2:

- Number of active CRADAs in use

3.1.2 CRADA policy clarification. OASD(R&E)/DLO will issue policy clarification memoranda and update the relevant DoD Directive and Instruction as suggested by findings from the T2 Comprehensive Review.

3.2 Goal: SBIR Enhancements

3.2.1 Increase program flexibility. Conduct internal policy review to reduce or eliminate award constraints, simplification of paperwork, and encouragement of new award applicants.

3.2.2 Reduction of time from application to award. To be measured by the average number of days from date of original SBIR application submission to award date.

3.2.3 OASD(R&E)/DLO will encourage an increased use of private sector scientists and engineers in grant proposal reviews.

4.0 Objective: Enhanced T2 Enterprise Intelligence. New metrics will provide increased context for measuring accelerated technology transfer and commercialization.

4.1 Goal: Increased Understanding of the DoD Innovation Ecosystem. DoD will provide interagency access to the Unified Reporting and Engineering Database as appropriate in order to share early stage research, which will facilitate interagency technology transfer of complementary technologies.

New Metrics to provide increased context of DoD's T2 will include:

- Number of Jointly Owned Inventions produced by the DoD each year.
- Number of Scientists and Engineers on personnel exchanges or training outside their organizations through a T2 mechanism.
- Number of Material Transfer Agreements each year.
- Number of refereed journal articles published each year relating to a DoD innovation

NEW ACTIONS AND ACTIVITIES THAT WILL ACCELERATE DoD T2

Concurrent with the development of an enhanced understanding of the baseline value of the DoD T2 activities, DoD will also implement a wide array of new actions and activities to accelerate DoD T2. These actions and activities will include a T2 Best Practices review, streamlined public access to the DoD Laboratories, and facilitated local and regional partnership engagements. These new actions and activities are discussed below.

5. T2 Best Practices Comprehensive Review

Background

To accelerate commercialization and technology transfer of DoD-generated innovations OASD(R&E)/DLO Defense Laboratories Office will undertake a DLE-wide Comprehensive Review of T2 best practices and lessons learned. The OASD(R&E)/DLO Comprehensive Review will include a full legal review of all relevant T2 authorities and statutory frameworks by an independent third-party entity. The Comprehensive Review will culminate with widespread distribution of best practices and lessons learned to the entirety of the DLE.

End State & Goals

The T2 Comprehensive Review will include the development of courses of action for streamlining T2 processes relating to CRADAs, SBIR, and the use of partnership intermediaries with the intention of accelerating commercialization and technology transfer of DoD innovations. These courses of action will include, but not be limited to, policy clarifications, T2 personnel resource allocation suggestions, and the development of new and simplified legal frameworks to assist small businesses in gaining access to DoD innovations. Of paramount importance, the Comprehensive Review will examine the benefits of an increased role for partnership intermediaries in advancing the goal of accelerated commercialization and transfer of DoD technology.

Way Forward: Potential DoD-wide Policy Changes

If appropriate policy changes are formulated during the OASD(R&E)/DLO Defense Laboratories Office's Comprehensive Review, DoD will update the relevant DoD Directive 5535.3 ("*DoD Domestic Technology Transfer (T2) Program*") and DoD Instruction 5535.8 ("*DoD Technology Transfer (T2) Program*") to ensure accelerated T2 and commercialization activities throughout the DLE.

6. Streamlining Public Access to DoD Laboratories Through Improved T2 Commercialization Processes

Background

Section 3 of the PM emphasizes the importance of streamlining licensing procedures and improving public access to federally owned innovations. The PM also encourages the development of new and effective T2 processes with regards to public access to federally owned inventions as well as improved grant award processes for the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

End State & Goals

To facilitate increased T2 and Commercialization Processes the Defense Laboratories Office will work to provide consolidated access to technologies available for commercialization from all DoD Laboratories through development of a comprehensive single source and to increase licensing through business friendly, innovative approaches. To operationalize this strategy the DoD will work to undertake the following:

- **Provide single point of access** to innovations and inventions across all DoD laboratories through the Defense Innovation Marketplace web site:
<http://www.defenseinnovationmarketplace.mil>.
- **Develop enhancements to licensing practices** from DoD Laboratories.
- **Potentially develop authority for DoD-owned copyrights for software innovations** from DoD Laboratories.

Way Forward: Streamlining Licensing Procedures and Improving Public Availability of Patent License Agreements and CRADAs

DoD has seen a steady increase of CRADAs over the years because DoD labs are looking to leverage private sector technology, resources, and funding through collaborative relationships. As the DoD continues to deal with significant budget pressure, there is an expectation of continued growth in the use of collaborative relationships. These efforts are of mutual benefit to both DoD and industry. Furthermore, to streamline licensing procedures and improve public availability of federally owned innovations, DoD Laboratories, in conjunction with the Military Services, are engaging in the following activities:

- **Reviewing patent licensing and collaboration practices** to reduce the time required to license DoD Laboratory technologies by the maximum practicable extent.
- **Collecting and distributing lessons learned and best practices** to DoD Laboratories and DoD-affiliated University Affiliated Research Centers (UARCs) and Federally Funded Research and Development Centers (FFRDCs) to encourage an increase in the development of effective CRADAs.

- **Ensuring all publicly available federally owned inventions are listed on a public database**, such as data.gov or through NIST, and developing strategies to increase the usefulness and accessibility of this data.
- **Tracking progress against these goals**, potentially via the Unified Reporting and Engineering Database (URED).

Way Forward: DoD SBIR & STTR Grant Award Programs

The DoD's SBIR and STTR Programs award grants that are designed to:

- Stimulate technological innovation;
- Increase private sector commercialization of federal research and development (R&D);
- Increase small business participation in federally funded R&D; and
- Foster participation by minority and disadvantaged firms in technological innovation.

The SBIR/STTR Programs awards are granted in three phases. Phase I (project feasibility) determines the scientific, technical and commercial merit and feasibility of the ideas submitted. Phase II (project development to prototype) is the major research and development effort, funding the prototyping and demonstration of the most promising Phase I projects. Phase III (commercialization) is the ultimate goal of each SBIR/STTR effort and statute requires that Phase III work be funded by sources outside the SBIR/STTR Program.

The DoD SBIR & STTR Programs are implementing the President's direction through:

- **Increase of program flexibility** by eliminating award constraints, simplifying paperwork, and encouraging competition;
- **Reduction of time from application to award**;
- **Encouragement of collaboration** with federal labs and educational facilities;
- **Expansion of private sector co-investment**;
- **Establishment of Commercialization Readiness Programs**;
- **Encouragement of private sector scientists and engineers in grant proposal reviews**;
- and
- **Establishment of goals and metrics to measure outcomes**.

7. Facilitating T2 & Commercialization through Local and Regional Partnership Engagements

Background

Section 4 of the PM tasks agencies to “take steps to enhance successful technology innovations networks by fostering increased Federal laboratory engagement with external partners, including universities, industry consortia, economic development entities, and State and local governments.” Specifically, increased efforts to facilitate commercialization through improved partnerships could contribute to overall T2 success by further expanding the knowledge and use of DoD-developed technologies within specific legal arrangements aimed at fostering economic growth and widespread improvements through innovation.

End State & Goals

To facilitate commercialization of DoD-derived technologies through increased engagement by DoD Laboratories with external partners, DoD Laboratories, in conjunction with the Services, will examine the feasibility of working towards the following goals:

- **Enhance commercialization ecosystem** by fostering additional DoD lab engagement with economic development entities, state & local governments.
- **Enhance the use of partnership Intermediaries.**
- **Provide greater access** to unique or underutilized federal R&D assets **through Enhanced Use Lease (EUL) authority and other facility use agreements.**

Way Forward: DoD Maximizes Full Use of T2 Authorities and Capabilities

In order to ensure that the DoD Laboratory Enterprise can maximize full use of the T2 Authorities and Capabilities the OASD(R&E)/DLO Defense Laboratory Office has undertaken a full legal review of all relevant authorities and statutory frameworks. The existing DoD T2 authorities and statutory frameworks (outlined in Appendix 2) are currently assembled in the Federal Laboratory Consortium’s “Green Book.” The full legal review will seek to clarify and refine the DoD’s current T2 guidance to encourage accelerated commercialization processes.

To work towards facilitation of commercialization through external partnerships, DoD Laboratories, in conjunction with the Services, will potentially expand or engage in the following activities:

- Encourage DoD and its agencies to partner, consistent with their missions & authorities, with partnership intermediaries.
- Pursue or invoke authorities, such as Enhanced Use Lease, tailored to engage in public-private partnerships leveraging relationships with incubators, accelerators, R&T parks on or near DoD labs.

- Engage in regionally-focused public-private partnerships exploring technical areas of importance to their mission which also work to further the commercialization of science-based innovations arising from DoD laboratories.

8. Plan of Actions and Milestones for 2013-2017

Following the release of this Strategy and Action Plan the OASD(R&E)/DLO Defense Laboratories Office will lead the implementation of the following activities:

Performance Review Process

OASD(R&E)/DLO will conduct an annual performance review to assess the progress of the DoD T2 community in meeting the defined performance objectives. This analysis will be based on the data collected in accordance with this Strategy and Action Plan and will culminate in an annual report to the OASD(R&E)/DLO.

Streamlining T2 and Commercialization Processes

DoD will work to develop a publicly available a single point of access regarding DoD technologies that enables the broadest possible matching of DoD technologies with outside interest, expertise, and commercialization opportunities. DoD will also conduct reviews of licensing and collaboration practices to reduce the time required to license DoD technologies and renew its focus on the development of effective CRADAs. For SBIR, DoD also will reduce the time from application to award and encourage private sector co-investment in SBIR grantees, seek partners for mentoring programs and Proof of Concept Centers, and track financial and programmatic outcomes for supported applicants.

Facilitating Commercialization Through Partnerships

To take advantage of physical proximity and ensure benefits flow to and from the local community, DoD will work to enhance the viability of commercialization efforts through local and regional partnerships. The first step in this process is to direct DoD laboratories to expand their engagement with external partners through better use of partnership intermediaries and the aggressive expansion of the use of existing legal mechanisms such as the authority to conduct Enhanced Use Lease agreements and other means of allowing more benefits to flow to and from DoD laboratories by increasing the overall use of government facilities by public and private partners.

Continuous Improvement

As with all change, the effort to implement the Strategy and Action Plan will require both a focus of resources on improving the T2 function as well as a process of continuous improvement as benchmarks, performance, and other factors continue to evolve over time. This effort will be led by the OASD(R&E)/DLO Laboratories Office in furtherance of maximizing the total value creation of T2 within and beyond the Department of Defense.

Appendix 1: Historical T2 Data

Source: Federal Laboratory Technology Transfer Summary Reports to the President and the Congress, National Institute of Standards and Technology, U.S. Department of Commerce.

Figure 1: DoD CRADAs

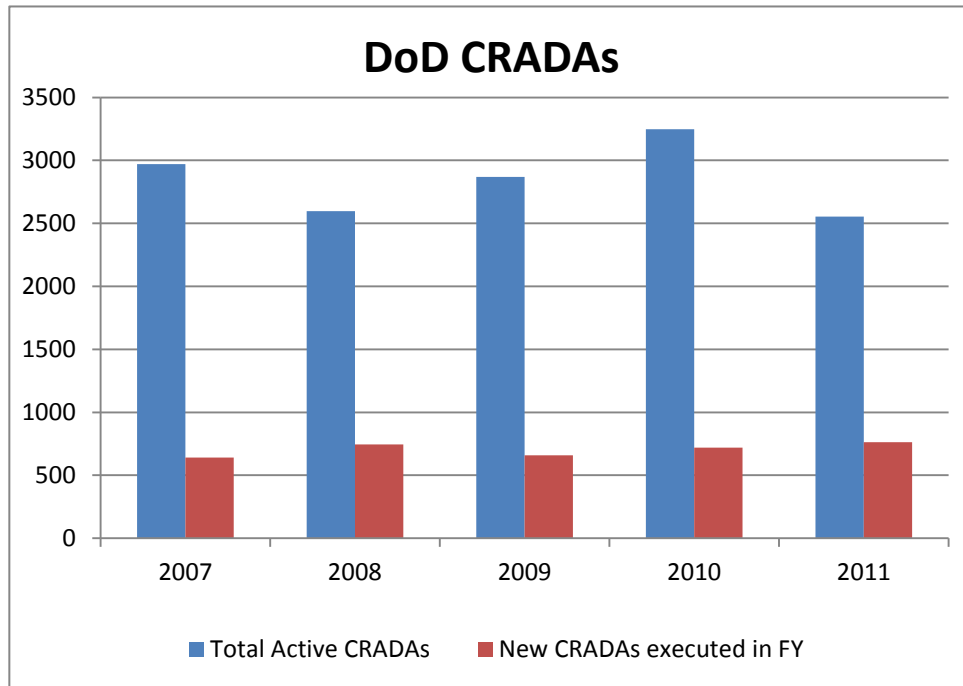


Figure 2: DoD Laboratory Inventions:

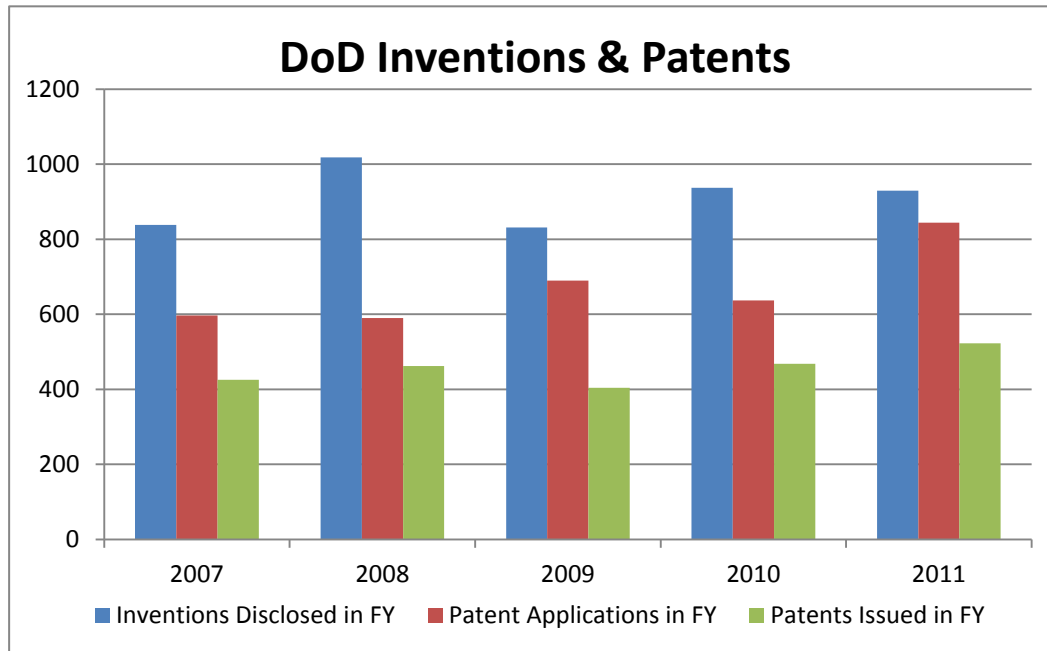


Figure 3: New Licenses:

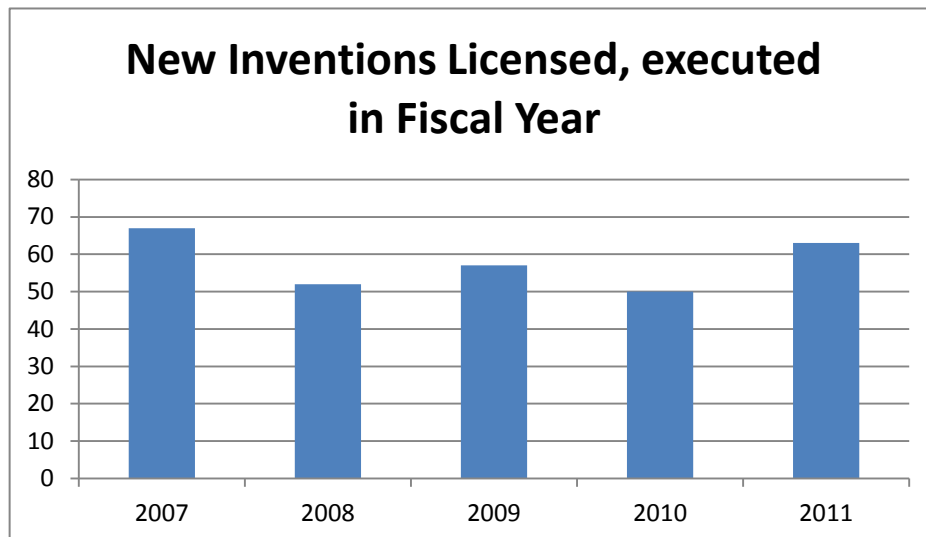


Figure 4: Active Licenses of DoD Patents

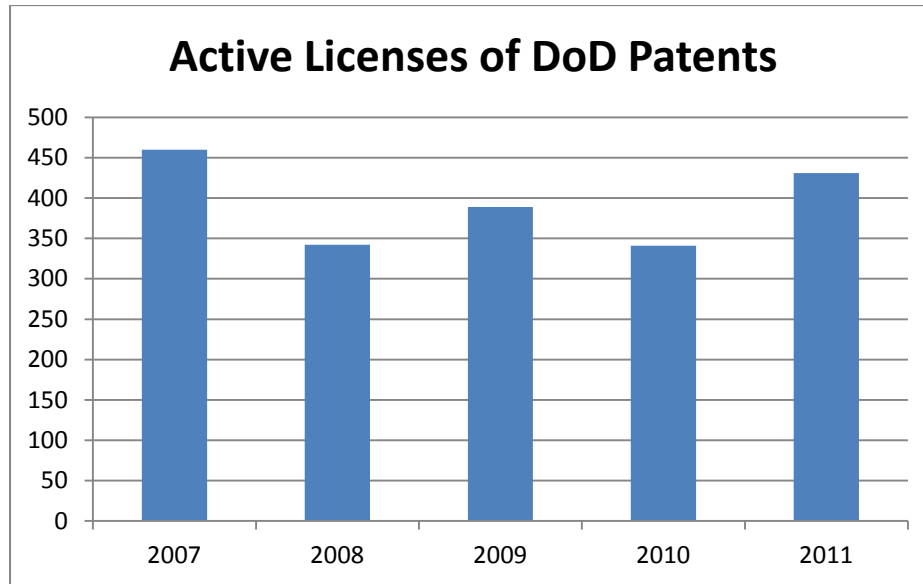
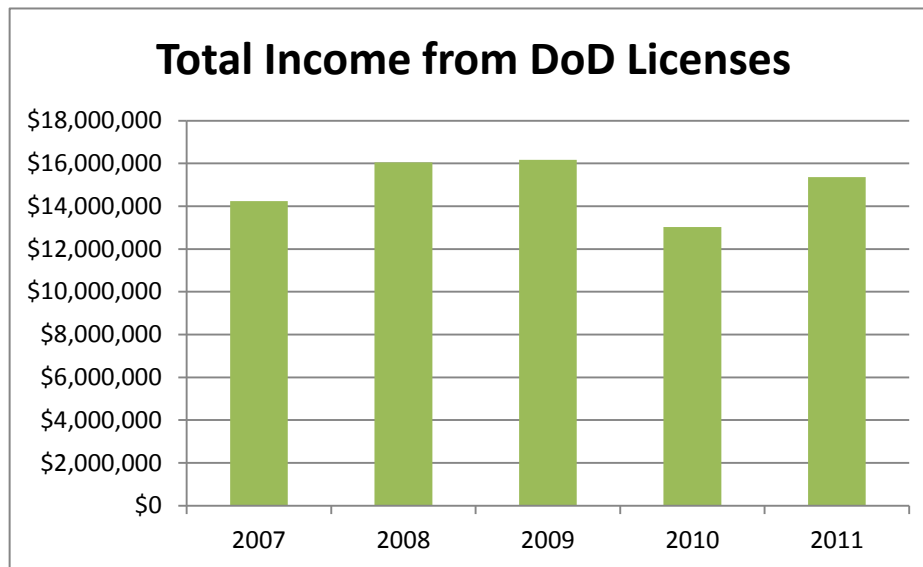


Figure 5: Total Income from DoD Licenses



Appendix 2: Relevant Technology Transfer Statutory Frameworks and Authorities

Statutory Framework	Objective	Summary	Impact for Defense Laboratories Office
15 USC 3710 - 3715. Utilization of Federal Technology	To establish the roles and responsibilities of 1) the National Institute of Standards and Technology, 2) the Federal Laboratory Consortium for Technology Transfer, and 3) the Offices of Research and Technology Applications (ORTAs) at Federal Laboratories.	<p>Policy:</p> <p>(1) It is the continuing responsibility of the Federal Government to ensure the full use of the results of the Nation's Federal investment in research and development. To this end the Federal Government shall strive where appropriate to transfer federally owned or originated technology to State and local governments and to the private sector.</p> <p>(2) Technology transfer, consistent with mission responsibilities, is a responsibility of each laboratory science and engineering professional.</p> <p>(3) Each laboratory director shall ensure that efforts to transfer technology are considered positively in laboratory job descriptions, employee promotion policies, and evaluation of the job performance of scientists and engineers in the laboratory</p> <p>Functions of the National Institute of Standards and Technology (U.S. Department of Commerce):</p> <p>(1) serve as a central clearinghouse for the collection, dissemination and transfer of information on federally owned or originated technologies having potential application to State and local governments and to private industry;</p> <p>(2) utilize the expertise and services of the National Science Foundation and the Federal Laboratory Consortium for Technology Transfer; particularly in dealing with State and local governments;</p> <p>(3) receive requests for technical assistance from State and local governments, respond to such requests with published information available to the Service, and refer such requests to the Federal Laboratory Consortium for Technology Transfer to the extent that such requests require a response involving more than the published information available to the Service;</p> <p>(4) provide funding, at the discretion of the Secretary, for Federal laboratories to provide the assistance specified in subsection (c)(3) of this section;</p> <p>(5) use appropriate technology transfer mechanisms such as personnel exchanges and computer-based systems; and</p> <p>(6) maintain a permanent archival repository and clearinghouse for the collection and dissemination of nonclassified scientific, technical, and engineering information.</p> <p>Establishment of Federal Laboratory Consortium for Technology Transfer</p> <p>(1) There is hereby established the Federal Laboratory Consortium for Technology Transfer (hereinafter referred to as the "Consortium") which, in cooperation with Federal laboratories and the private sector, shall—</p> <p>(A) develop and (with the consent of the Federal laboratory concerned) administer techniques, training courses, and materials concerning technology transfer to increase the awareness of Federal laboratory employees regarding the commercial potential of laboratory technology and innovations;</p> <p>(B) furnish advice and assistance requested by Federal agencies and laboratories for use in their technology transfer programs (including the planning of seminars for small business and other industry);</p> <p>(C) provide a clearinghouse for requests, received at the laboratory level, for technical assistance from States and units of local governments, businesses, industrial development organizations, not-for-profit organizations including universities, Federal agencies and laboratories, and other persons, and— (i) to the extent that such requests can be responded to with</p>	Identifies major T2 stake holders and their roles and responsibilities.

Statutory Framework	Objective	Summary	Impact for Defense Laboratories Office
		<p>published information available to the National Technical Information Service, refer such requests to that Service, and (ii) otherwise refer these requests to the appropriate Federal laboratories and agencies;</p> <p>(D) facilitate communication and coordination between Offices of Research and Technology Applications of Federal laboratories;</p> <p>(E) utilize (with the consent of the agency involved) the expertise and services of the National Science Foundation, the Department of Commerce, the National Aeronautics and Space Administration, and other Federal agencies, as necessary;</p> <p>(F) with the consent of any Federal laboratory, facilitate the use by such laboratory of appropriate technology transfer mechanisms such as personnel exchanges and computer-based systems;</p> <p>(G) with the consent of any Federal laboratory, assist such laboratory to establish programs using technical volunteers to provide technical assistance to communities related to such laboratory;</p> <p>(H) facilitate communication and cooperation between Offices of Research and Technology Applications of Federal laboratories and regional, State, and local technology transfer organizations;</p> <p>(I) when requested, assist colleges or universities, businesses, nonprofit organizations, State or local governments, or regional organizations to establish programs to stimulate research and to encourage technology transfer in such areas as technology program development, curriculum design, long-term research planning, personnel needs projections, and productivity assessments;</p> <p>(J) seek advice in each Federal laboratory consortium region from representatives of State and local governments, large and small business, universities, and other appropriate persons on the effectiveness of the program (and any such advice shall be provided at no expense to the Government); and</p> <p>(K) work with the Director of the National Institute on Disability and Rehabilitation Research to compile a compendium of current and projected Federal Laboratory technologies and projects that have or will have an intended or recognized impact on the available range of assistive technology for individuals with disabilities (as defined in section 3002 of title 29), including technologies and projects that incorporate the principles of universal design (as defined in section 3002 of title 29), as appropriate.</p> <p>Functions of Research and Technology Applications Offices:</p> <p>(1) to prepare application assessments for selected research and development projects in which that laboratory is engaged and which in the opinion of the laboratory may have potential commercial applications;</p> <p>(2) to provide and disseminate information on federally owned or originated products, processes, and services having potential application to State and local governments and to private industry;</p> <p>(3) to cooperate with and assist the National Technical Information Service, the Federal Laboratory Consortium for Technology Transfer, and other organizations which link the research and development resources of that laboratory and the Federal Government as a whole to potential users in State and local government and private industry;</p> <p>(4) to provide technical assistance to State and local government officials; and</p> <p>(5) to participate, where feasible, in regional, State, and local programs designed to facilitate or stimulate the transfer of technology for the benefit of the region, State, or local jurisdiction in which the Federal laboratory is located.</p>	

Statutory Framework	Objective	Summary	Impact for Defense Laboratories Office
<p>10 USC 2515 - Sec. 2515. Office of Technology Transition</p>	<p>Established is Office of Technology Transition within the Office of the Secretary of Defense.</p>	<p>Duties: The head of the office (of Technology Transition) shall ensure that the office –</p> <ul style="list-style-type: none"> (1) monitors all research and development activities that are carried out by or for the military departments and Defense Agencies; (2) identifies all such research and development activities that use technologies, or result in technological advancements, having potential nondefense commercial applications; (3) serves as a clearinghouse for, coordinates, and otherwise actively facilitates the transition of such technologies and technological advancements from the Department of Defense to the private sector; (4) conducts its activities in consultation and coordination with the Department of Energy and the Department of Commerce; and (5) provides private firms with assistance to resolve problems associated with security clearances, proprietary rights, and other legal considerations involved in such a transition of technology. <p>Purpose: The purpose of the office shall be to ensure, to the maximum extent practicable, that technology developed for national security purposes is integrated into the private sector of the United States in order to enhance national technology and industrial base, reinvestment, and conversion activities</p>	<p>Establishes T2 responsibilities of the Office of Technology Transition</p>

Statutory Framework	Objective	Summary	Impact for Defense Laboratories Office
15 USC sec 3710	Broad encouragement of cooperation between Federal Government and Non Federal entities with regards to research and technological innovation	<p>Policy: "Cooperation among academia, Federal laboratories, labor, and industry, in such forms as technology transfer, personnel exchange, joint research projects, and others, should be renewed, expanded, and strengthened."</p> <p>Background: The Congress finds and declares that: (1) Technology and industrial innovation are central to the economic, environmental, and social well-being of citizens of the United States. (2) Technology and industrial innovation offer an improved standard of living, increased public and private sector productivity, creation of new industries and employment opportunities, improved public services and enhanced competitiveness of United States products in world markets. (3) Many new discoveries and advances in science occur in universities and Federal laboratories, while the application of this new knowledge to commercial and useful public purposes depends largely upon actions by business and labor.</p>	Broad encouragement of cooperation between DoD and Non Federal entities with regards to research and technological innovation
DoDD 5535.3, "DoD Domestic Technology Transfer (T2) Program," May 21, 1999.	Implements, establishes policy, and assigns responsibility for DoD domestic T2 activities	<p>Policies: (1) Promote domestic T2 through a variety of cooperative activities, such as CRADAs, and partnerships. (2) Promote domestic T2 through US and foreign patenting and rights agreements. (3) Allow non-Federal entities to use independent research and development funding as a part of their contributions to domestic T2 activities. (4) Allow conduct of T2 activity with foreign persons, industrial organizations, or government R&D activities.</p> <p>Responsibilities: Director, Defense Research and Engineering, shall: (1) Implement 10 U.S.C. 2515 (reference (e)) to monitor all DoD R&D activities; identify DoD R&D activities using technologies and technology advancements that have potential non-DoD commercial application; serve as a clearinghouse for, coordinate, and otherwise help the transfer of technology to the U.S. private sector; assist private firms to resolve policy issues involved with the transfer of technology from the Department of Defense; and consult and coordinate with other Federal Departments on matters involving T2. (2) Serve as oversight authority for execution of all domestic T2 science and technology (S&T) matters. (3) Develop policy for DoD Component participation in, and support of, Federal S&T domestic T2 programs. (4) Develop guidance for implementation of domestic T2 policy. (5) Ensure that the DoD Components establish T2 awards programs.</p>	Mandates specific responsibilities for ASD(R&E) to lead T2 efforts.

Statutory Framework	Objective	Summary	Impact for Defense Laboratories Office
DoDI 5535.8, "DoD Technology Transfer (T2) Program," May 14, 1999.	Implements policy, assigns responsibilities, and prescribes procedures under DoDD 5535.3 for implementation of T2 programs.	<p>Policies: Under DoD Directive 5535.3, T2 activities shall be an integral element of the DoD national security mission, and recognized as a key activity of the DoD laboratories and/or technical activities.</p> <p>Responsibilities: Director, Defense Research and Engineering, shall:</p> <ul style="list-style-type: none"> (1) Monitor all DoD research and development (R&D) activities. (2) Identify R&D activities using technologies that have potential non-DoD commercial application. (3) Serve as a clearinghouse for, coordinate, and otherwise facilitate T2 to the private sector. (4) Assist private firms to resolve problems involved with the transfer of technology from the Department of Defense. (5) Consult and coordinate with the other Federal Departments on matters involving T2. (6) Issue DoD 5535.8-H to provide common practices & procedures to promote a uniform DoD approach to T2. 	Specifies activities for which ASD(R&E) is responsible in order to fulfill the responsibilities outlined in DoDD 5535.3.